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ABSTRACT

This document proposes an agenda for globalizing agricultural science and education which has implications for higher education, research, and extension programs at land-grant and similar universities. To enhance global competitiveness of U.S. agriculture through human resource development, institutions are urged to: globalize undergraduate and graduate curriculum, provide leadership development in a global context, encourage pursuit of related scholarly objectives and knowledge creation, and create cross-cultural competency and understanding. Another focal area is the collection and dissemination of information about market, trade, and business opportunities. Five approaches to accomplish this goal are suggested, including disseminating information about global agribusiness and investment opportunities and developing options for improved decision making in global markets, trade, and policy. Partnerships between U.S. and overseas universities could help to ensure two-way technology flow through collaborative research, establish international agricultural partnerships and joint ventures, and ensure the safe supply of food in international trade. Agriculturally-based economic development could help expand markets for U.S. products and services, promote global food security to enhance political stability, and promote global environmental quality. (SW)

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GLOBALIZING AGRICULTURAL SCIENCE AND EDUCATION PROGRAMS FOR AMERICA

ED 417 641

International Agriculture Section

National Association of
State Universities
and Land-Grant
Colleges

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Globalizing Agricultural Science and Education Programs for America

International Agriculture Section

National Association of

State Universities and

Land-Grant Colleges

Dear Colleagues:

I am pleased to present to you the Agenda developed by the Globalizing Agricultural Science and Education for America (GASEPA) Task Force. It has been adopted by the Board on Agriculture of the National Association of State Universities and Land Grant Colleges. The Task Force, which developed this Agenda, is representative of the various disciplines found on the Board on Agriculture, the Board on Human Sciences, the Board on Veterinary Medicine, the American Association of State Colleges of Agriculture and Renewable Resources, and other related disciplinary areas. It is also representative of their affiliated stakeholders.

The GASEPA Task Force, jointly with the International Committee on Organization and Policy (ICOP), is taking the leadership in defining an implementation plan for this important agenda.

The Agenda is intended to help position U.S. agriculture to continue to be a major contributor to global food security in the post-Cold War era. It has several key dimensions, including human resource development, global environmental issues, global market creation, and increased participation in global markets. All of these have important implications for the University community.

As we position U.S. agriculture for the 21st century, we are cognizant that higher education, research, and outreach programs at our land-grant and similar universities will need to address global issues more than in the past. We urgently need to find ways to increase the level of engagement of our resident teaching faculty, research scientists, and extension agents in addressing global dimensions of food and fiber industries, and the natural resource base on which they rely. Only in this way will we adequately serve the needs of the citizens of our respective states.

We seek your assistance in carrying the agenda forward during the years to come.

Bobby D. Moser, Chairman

GASEPA Task Force

Globalizing Agricultural Science and Education Programs for America (GASEPA)

1. Enhance Global Competitiveness of U.S. Agriculture Through Human Resource Development

- Provide a new education environment that (1) produces U.S. students and faculty who are able to compete in a global society; (2) rewards scholarly activities focused on international agriculture; and (3) develops leadership and business skills in U.S. farmers and agribusiness leaders enabling them to operate in the competitive global environment.

2. Develop and Disseminate Information About Market, Trade, and Business Opportunities

- Provide globally-focused research and extension programs that develop, analyze, and disseminate market and trade information that will enable farmers and agribusinesses to more effectively compete in the global economy.
- Develop technologies that support new export markets for agricultural products.

3. Establish Mutually Beneficial Collaborative Global Partnerships

- Support programs that result in linkages of U.S. universities, agencies, and businesses that foster the development and flow of new technologies and natural resources to the U.S.
- Develop partnerships that promote the safety, availability, and quality of world food supplies.

4. Promote Trade Through Global Economic Development

- Provide support to developing nations (LDCs) to improve their agricultural systems in ways which enable them to generate more income.

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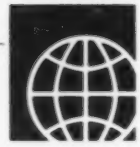

Increased purchasing power will enable LDCs to become trading partners and responsible members of the global community. Economic growth will also help to alleviate poverty and enhance food security among the poor nations of the world.

- Provide support to LDCs to produce university graduates with greater global awareness.

5. Promote Global Environmental Quality and the Stewardship of Natural Resources Management

- Provide education, research, and extension programs that integrate agricultural production, natural resources management, protection of biodiversity, and enhancement of germ plasm to promote the improvement and maintenance of global environmental quality.
- Promote the conservation, preservation, and utilization of global genetic resources to improve food security and quality of life. Develop science-based natural resource management systems which will result in the sustainable use of our soils, water, forests, and fisheries.

GASEPA: An Emerging Agenda for Sustainable Agriculture, Food, Natural Resources, Rural and Related Human Science Programs[1]

Introduction

1. We are on the brink of a new millennium, one which will continue to be profoundly transformed by the mass communications revolution and by new transport technologies which emerged during the past fifty years. The world wide web, internet, and other sophisticated communications systems enable us to live in a truly global environment. Many actions in one part of the world rapidly impact on the rest. Understanding and appreciating our partners in other nations will be essential in order to live and compete in this environment.

2. The U.S. economy, in particular its agricultural and natural resources sectors, is being challenged as never before to develop and use new technologies, to expand industrial uses of food and fiber materials, and to operate in globally competitive and environmentally responsible ways.

This requires expansion of research linkages to major centers in other nations. Traditional and emerging centers of research excellence exist in Europe, the Pacific Rim, the Newly Independent States (NIS) of the former Soviet Union, Latin America, Africa, South Asia and in the Consultative Group on International Agricultural Research (CGIAR) system. Cooperative research programs with such centers will allow us greater and more rapid access to germ plasm, information, and technologies of use to our constituencies. Such access will enable us to identify and respond more effectively to emerging problems in nutrition and health, including pests and diseases, and opportunities, such as markets and commercialization of technologies.

3. Globalization of the agricultural economy requires that agriculture and agricultural product marketing be researched and taught with respect

[1] The Task Force consists of representatives of all member and affiliated units of the Commission on Food, Environment and Natural Resources. It is chaired by Dr. Bobby D. Moser, Vice President for Agricultural Administration at The Ohio State University. For more information, contact Dr. David O. Hansen, Director, International Programs in Agriculture, The Ohio State University [Phone: (614) 292-7252; E-Mail: Hansen.4@osu.edu; Fax: (614) 292-1757].

to their relationships with the environment and access to emerging markets in other countries. Continuing education programs, particularly those represented by state extension services, need to incorporate global issues into their portfolios. The U.S. exports about $60 billion dollars each year in agricultural products, which represents hundreds of thousands of jobs for U.S. citizens, and an important reduction in our balance of trade deficit. Major market expansions will continue to occur overseas, particularly in developing nations known as emerging markets. Our agricultural research and extension systems urgently need to develop materials on market preferences and opportunities, in order to adapt our research programs to enable us to compete in these markets, and to provide resulting information and technologies to U.S. producers and agribusinesses involved in value-added processes.

4. In the 21st century, an educated person will need to function effectively and responsibly in a global environment both in day-to-day work and in social interactions. Providing this capacity is at the core of the educational mission of NASULGC[2] member institutions and allied baccalaureate-granting institutions offering programs in food, agriculture, and natural resources (AASCARR[3] members), human sciences, forestry, and veterinary medicine. College graduates of today must have a global perspective to be true "society ready graduates." Ideally, all students will graduate, having had an enriching international experience and with global understanding that flows from it.

Our world class faculty must give students enriching experiences that are based on a rigorous curriculum and international experiences that optimize learning. Our agribusiness enterprises will depend on graduates who have a global view to remain competitive and to keep rural communities viable. An international dimension should be integrated throughout the academic experience. Our challenge is to redefine the curriculum accordingly, beginning with the first academic term. Students and faculty should expect to learn more about international issues as a matter of course.

5. U.S. colleges and universities should continue to be involved in programs which promote social and economic well-being in other nations. As a leading nation in the 21st century, we need to continue to manifest our concern for and contribute to the solution of famine, hunger, and food security in developing nations. We will need to

[2] National Association of State Universities and Land Grant Colleges.
[3] American Association of State Colleges of Agriculture and Renewable Resources.

continue to dedicate resources to solving these conditions which plague much of the globe, and to continue to involve our best faculty and students in this process. Economic growth in these nations will ultimately mean more markets for our producers, and stronger global economic and political partners.

6. We anticipate that this agenda for action will prove to be useful as an overarching rationale for various initiatives and programs, currently being advocated and/or in effect, that are related to the globalization of science and education programs at our respective universities. They include the Global Research on the Environmental and Agricultural Nexus (GREAN), the Globalizing Agricultural Programs (GAP) Initiative, the Collaborative Research Support Programs (CRSPs), funded by the U.S. Agency for International Development, and the action agenda proposed by the Commission on International Trade, Development and Cooperation.

Vision

Globally competent stakeholders, faculty, and students in the U.S. food, agriculture, and natural resource sectors, who live, compete, and work well in an ever dynamic and interdependent world community.

Mission

An international dimension is incorporated into teaching, research, and extension programs so that (1) our graduates understand and appreciate the global environment in which agriculture functions, (2) our research and extension programs have access to the best ideas and technologies regardless of where they are generated or developed, and (3) the above strengthen U.S. international competitiveness within a sustainable global agricultural system.

I. Enhancing Global Competitiveness of U.S. Agriculture Through Human Resource Development

Employers expect graduates to be prepared to operate in, understand, and improve their communities and nation, as well as to promote consumer interests. As we approach the 21st century, this increasingly implies that we produce students who are able to live and work in a global society and economy. Their economic, social, and political decisions will need to account for what is occurring in other parts of the world and in the global economy. Our educational institutions must not only inform them about contemporary world events, but also enable them to expand their appreciation for and ability to deal with significant global dimensions of their future work life and social milieu.

a. Globalizing undergraduate and graduate curriculum

A global dimension should permeate both the undergraduate and graduate curriculum. Global issues should not be limited to a few specific specialized courses. Instructors must consider international implications of their content and its relationship to immediate local applications. This is true for basic and applied courses in specific disciplinary areas as well as for general support courses in the agricultural, natural resources, human and other affiliated sciences. Resident instructors should be given opportunities to globalize their syllabi.

For faculty to globalize their courses, they will have to understand the international context of agriculture; the science and knowledge produced in other countries; and how their disciplines relate to global dimensions of business and the work force. They should be encouraged to undertake internships with multinational corporations and with other business entities working in the global food, agriculture, and natural resources arena. They should be encouraged to undertake sabbaticals overseas which will increase their understanding of how agricultural production systems, market conditions, and natural resource management issues in other nations affect our own economy, and of how to better prepare their students to take advantage of the opportunities and to cope with the challenges related to these conditions. They should also be encouraged to work with governmental and non-governmental organizations that deal with agriculture, human capital and natural resource development problems overseas.

Students need to be prepared to live and work in overseas environments. They also need to understand what is occurring in other parts of

the world as citizens living and working in the United States. This will require familiarity with and appreciation of other cultures and relevant languages, of economic, social, and political conditions abroad, and of business practices and market opportunities overseas. Knowledge of one or more countries as well as broader global knowledge should be imparted to all students. Students need to be aware of the looming importance of developing countries as emerging markets and as contributors to global environmental and social problems. They should acquire this knowledge through appropriate study abroad experiences, including internships with agribusinesses overseas, other living/learning experiences, and formal classroom study in other countries. These experiences should be integrated into undergraduate and graduate student curricula. Some graduate students should be encouraged to undertake extended research in overseas contexts and to acquire literacy in one or more foreign languages, including non-Western languages.

b. Providing leadership development in a global context

Leadership training, offered as part of continuing education programs on Land Grant University campuses, should provide early and mid-career agribusiness representatives with opportunities to understand better the global dimensions of the contemporary agricultural economy. This implies interaction with decision makers in state and national agencies that deal with international markets, international trade, and related policy development. It also implies international travel to gain first hand information about the agriculture, agribusinesses, and markets of other nations. Ideally, international travel experiences would include direct contact with U.S. firms doing business overseas, as well as with agribusinesses and farmers in other countries.

c. Encouraging pursuit of related scholarly objectives and knowledge creation

The emerging new forms of social and economic organization that are accompanying the transformation of the global economy require attention by scholars from our institutions. The topics are diverse in disciplinary content and require inputs along the entire range of research, from discovery to application. Our respective colleges and universities will need to create and broaden opportunities for faculty to engage their minds and laboratories in the creation of this knowledge base, to ensure that it is effectively used, and to reward those engaged in this activity. They must

also be encouraged to prepare their students to understand these issues and to participate in activities directed to their solution.

d. Creating cross-cultural competency, awareness, and understanding

In order to be able to conduct research related to market development and exploration, and effectively to disseminate resulting information, faculty and staff at our colleges and universities need to know more about relevant overseas contexts. Thus they need to be provided with opportunities to initiate research on appropriate topics. They also need to be drawn into campus networks of faculty who currently conduct research in countries that represent substantial overseas market opportunities. Ideally, this would be accomplished in ways that directly integrate stakeholders into this learning process, through joint activities, such as workshops, conferences, overseas study tours, and trade missions. Ultimately, it is the stakeholders that must benefit from internationalization of the teaching, research, and extension faculty and staff at our colleges and universities, through their enhanced ability to live and work in the global community.

Connections should be facilitated between area studies programs and international agricultural program offices, and international business and related centers and institutes on their campuses.

II. Development and Dissemination of Information About Market, Trade and Business Opportunities

In 1996, agricultural exports amounted to nearly 60 billion dollars. These markets will continue to increase in importance for U.S. agricultural producers and agribusinesses, with the greatest growth coming from the developing countries. Over time it is important that small and medium size producers and businesses have access to information about these opportunities, as well as larger producers and businesses. U.S. agricultural colleges and universities are in a unique position to summarize information from other primary research sources, like the U.S. Departments of Commerce, State, and Agriculture, as well as from their counterpart state agencies for these stakeholders. This task can be jointly pursued by agricultural experiment stations and extension systems in ways which complement efforts to globalize undergraduate and graduate curriculums.

a. Providing information about global agribusiness and investment opportunities

Research and extension specialists at agricultural colleges and universities have a unique opportunity to develop information about global agribusiness and investment opportunities and to disseminate it to the citizenry of their respective states. Much information is being generated; however, its accessibility to most agricultural producers, agribusinesses, and consumers is limited. The challenge remains to package existing information in ways that make sense and are easily interpreted by stakeholders. This information should be made accessible to other university extension personnel and agents working with stakeholder groups, as well as directly through popular publications. Information about the demand for agricultural products, including raw materials and value added products, needs to be collected, interpreted, and packaged for stakeholders. Programs need to be created to facilitate the systematic flow of this information.

b. Developing and disseminating information about non-tariff trade barriers

Research needs to be conducted on non-tariff trade barriers in other countries. For example, phytosanitary barriers pose a serious limitation to export products, particularly to raw agricultural produce. Recent events indicate that some nations are using the incorporation of biotechnological advances into U.S. production systems as a pretext to limit imports. The U.S. agricultural research system needs to strengthen its capacity to respond to unwarranted import restrictions imposed by trading partners, through generation and presentation of unbiased data about contentious issues. In addition, studies of the social acceptance of genetically engineered products in overseas markets need to be undertaken. These studies need to be fed into U.S. agricultural policy forums to ensure that they are considered when developing positions on overseas market development. They also need to be disseminated to U.S. agricultural producers and agribusinesses to ensure adequate understanding of these market limitations.

c. Identifying niche markets for agricultural products and their derivatives in other nations

Research on potential market niches for specialized products needs to be undertaken. This implies the conduct of research in other countries on

consumer preferences, current agricultural production and food derivatives, and the capacity of these markets to absorb U.S. products. In this connection, new linkages with agricultural and food production and marketing institutions in other nations need to be forged. Our researchers should be encouraged to conduct such research and to involve their graduate students in this effort. Extension faculty should draw on this information and should be encouraged to take agricultural producers and agribusiness representatives on overseas tours of markets to help them learn more about such market potentials.

d. Developing options for improved decision making in global markets, trade, and policy

The outcomes of the latest round of GATT discussions and the NAFTA highlight the impact of broad policy instruments on trade. These trade agreements impact directly on policy options available to U.S. agribusinesses and on agricultural producers focusing on export markets. U.S. university faculty are in a unique position to help interpret their impact on trade policy, both nationally and at the state and local levels. They are also in a unique position to work directly with interest groups in the U.S. to ensure that policy implications are understood and factored into decision-making regarding global markets. These same faculty can also work with state agencies, such as departments of development and agriculture, to ensure that they are fully apprised of policy implications of bilateral and multilateral agreements.

e. Linking farmers and agribusinesses to international trade providers

Numerous private and public entities exist to provide services to agricultural producers and agribusinesses to facilitate their participation in international trade and exports in particular. Universities, especially through their extension systems, are in a unique position to link their clientele with these service providers. They should be encouraged to develop programs which provide information on them, as well as to create forums in which the service providers and clientele are brought together to discuss factors impinging on trade with entities in particular regions of the world.

III. Mutually Beneficial Collaborative Global Partnerships

Our colleges and universities with significant agricultural, natural resource, and human science programs need partnerships with counterpart institutions overseas in order to increase global competency, identify and address issues of mutual concern, and conduct related research. These partnerships may involve two or more institutions. They should facilitate appropriate counterpart relationships for our research, extension, and teaching faculty, and they should be premised on mutual benefits for the participating institutions and for their respective societies. Care should be taken to select partner institutions using mutual gain, compatibility of faculty interests and competencies, market potentials, and other criteria of significance to the U.S.

a. Ensuring two way technology flows through collaborative research

Cross national food, agricultural, and natural resource research partnerships should incorporate the principle of mutual gain. In concrete terms, benefits can include direct access to technologies generated, germ plasm, and other relevant research outputs. Whenever possible, the principle of reverse technology flow should be incorporated into research activities. Special emphasis should be given to establishing appropriate linkages with premier public and private research institutions, including members of the CGIAR system and other major research institutes in European, Pacific Rim, NIS, Latin American, and African nations. Attention should also be given to ensuring that all members of the emerging global agricultural research system, including overseas universities, farmers, consumers, and non-governmental organizations, be incorporated into these relationships.

b. Establishing international agricultural partnerships and joint ventures

U.S. agricultural colleges and universities should seek to establish partnerships with counterpart institutions overseas with the objective of facilitating linkages between their respective agricultural producers and other agribusiness community members. Such partnerships can provide unique bridging opportunities for these communities and enable their members to engage in serious discussion of joint business ventures and collaborative market identification. Research and extension faculty with

relevant country expertise can act as advisors in this dialogue process, identifying points of mutual interest and maximizing gain to both parties.

c. Ensuring the safe supply of food in international trade

Through collaborative research and outreach programs, faculty from our agricultural colleges and universities and from counterpart institutions overseas will increase global understanding of issues related to cross border flows of safe and healthy food. U.S. university scientists should work directly with the USDA/ARS[4] and the USDA/ APHIS[5] along with scientists in other nations to address the safety of imported agricultural products and to control the spread of pests and diseases that can cause billions of dollars of harm to the U.S. agricultural industry and to the U.S. economy in general.

d. Creating greater awareness and understanding of global environmental concerns and seeking to address them through policy analyses

Population pressures resulting in tropical deforestation, land degradation, water pollution, and other resource degradation phenomena in other nations have direct impacts on the U.S. Global warming is one illustration. Conservation of critical biological diversity is another. Ultimately, the well-being of our children and grandchildren, indeed perhaps the very survival of our species, will depend on our ability to address these problems globally. U.S. agricultural and natural resource scientists and extension faculty need to become more engaged with these problems and to incorporate them into their research, extension, and instructional programs. Effective discussion and consideration of them and how they relate to similar concerns in the U.S. will depend on the ability of our faculty to study these problems first hand, and to address them where they occur. This will in turn require the provision of sufficient overseas research and learning opportunities.

IV. Promoting Trade Through Global Economic Development

Economic assistance and cooperation can make a significant contribution to economic growth in developing countries by helping to create conditions favorable for private sector trade and investment. U.S.

[4] Agricultural Research Service of the U.S. Department of Agriculture
[5] Animal and Plant Health Inspection Service of the U.S. Department of Agriculture

agribusinesses are thus given opportunities to increase their economic activity in these nations, which currently represent the greatest opportunities for sales of U.S. products. Future growth in U.S. agricultural exports will be even more closely tied to development investments. Lower population growth and high incomes in developed countries implies that demand for food will be primarily inelastic. On the other hand, developing countries represent huge potential markets because a relatively large share of an increase in income is used to purchase more food, and populations continue to expand at higher rates.

a. Agriculturally based economic development to expand markets for U.S. products/services

Markets are increased by increasing consumption power in these nations. The resulting demand for agricultural products and by products is greater if assistance and cooperative programs are targeted to increase the income of the poor. They represent the sector where increased demand for these products is greatest. U.S. universities have a comparative advantage in contributing to these programs based on their previous involvement in similar programs, and their direct ties to agribusiness and agricultural producers in their respective states. They can build on past experiences to maximize activities designed to promote economic growth among the poor. They include cooperative programs in health and education that are designed to improve human capacity.

b. Promoting global food security to enhance political stability

Food security is often seen as a problem of lack of availability of foods. However, access to food is the most serious problem in the short term. U.S. agricultural colleges are equipped to contribute to the alleviation of some of these causes. They include poverty alleviation, or the inability to purchase food, the elimination of trade policies in emerging markets which limit their ability to bring in food stuffs from the U.S. and other nations, and inadequate systems to move, market, and process food products. Appropriate U.S. colleges and universities can also contribute to programs designed to conserve the natural resource bases of these countries upon which food production depends.

V. Promoting Global Environmental Quality and Stewardship of Natural Resources

Globalization of the agricultural economy reflects similar processes that are occurring in other segments of the world economy. They are having a profound impact on the societies of other nations and our own. These processes include changes in ways in which these societies organize and govern themselves, create consumer preferences, generate and distribute wealth, and relate to their natural resource bases. Agriculture and related environmental issues need to be understood in that context, and U.S. citizens need to be aware of them in order to make informed decisions at home.

As a leading nation in the world we must be knowledgeable about and participate in the global economy in ways that benefit all nations, while preserving the natural resource base that sustains life on our planet. Thus, our universities must address other issues related to international agriculture and broaden its base of inquiry and participation beyond topics of direct economic and political interest.

a. Sustainable management of natural resources

In recent years, the global community has become more aware of the rapid depletion of the natural resource bases of poorer nations and the global consequences of this. Our faculty have ably addressed these issues in the U.S., and are currently engaged in their analyses in the poorer nations. New ways must be identified to increase participation by our scientists in seeking to address these problems. This will require that they form new alliances with the international agricultural research centers that are committed to this task, as well as with scientists and extension systems, rural communities, and non-governmental organizations that work with them in these nations.

b. Protecting biodiversity and enhancing the use of genetic resources

Biodiversity is the foundation of our food system and is crucial to the conservation of our natural resources. The preservation, evaluation, and utilization of our genetic resources is essential for the protection and improvement of our crop and animal species. Genetic resources provide the diversity needed to improve our food, feed, and fiber systems as well as the genetic material necessary to respond to new challenges to our

agricultural system. Population growth will significantly increase future food demands, thereby further stressing our declining land base. The conservation and sustainable use of these resources must be ensured for present and future generations, to promote the use of these resources, to reduce per unit production costs, and to enhance the global environment. Use of hazardous chemicals can be reduced by identifying genetic solutions to agricultural production constraints. Biodiversity serves as a rich reservoir for compounds which can benefit humankind in many ways, including medicinal and industrial uses and the development of new crops.